Abstract of the Disclosure

A spatial resolution enhancement and dynamic range extension for a Computerized Airborne Multicamera Imaging System (CAMIS). CAMIS is a multispectral imaging system for diverse manned and unmanned aerial vehicles to fly along flexible paths and altitudes for a wide variety of applications. CAMIS comprises four spectral bands of progressive scan CCD video cameras with 782 x 576 square pixels each, giving a total of 1.82 million effective pixels. These cameras are synchronized and aligned in parallel with sub-pixel-accurate spatial offsets over a common field of view. A software procedure interpolates the original four-band 782 x 576 captures into 1564 x 1152 ones using a bi-linear algorithm, and then performs geometric correction and band-to-band pixel registration. The result is a more precisely registered, spatial resolution enhanced multispectral image, sized 1540(H) x 1140(V) x 4(Bytes). The CAMIS CCD cameras include a controllable electronic shutter, which permits the system to acquire a desirable range of signals by a computed exposure, and then bracket it with two additional up/down-stepped exposures into computer memory. The integrated data set of the multiple stepped exposures results in effectively extending the dynamic range of the measurement.

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